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INTRODUCTORY ADDRESS

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AT THE OPENING OF THE WINTER SESSION OF THE
MEDICAL DEPARTMENT.

ALSO,

AN INAUGURAL LECTURE

On Materia Medica and Therapeutics,

GIVEN MAY 1, 1857.

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INTRODUCTORY ADDRESS.

MR. PRINCIPAL AND GENTLEMEN,

I am here to-day in obedience to the wish of my friends and colleagues—the Medical Professors—to deliver the Annual Address with which it is customary, in this and other schools of medicine, to begin the work of the winter session.

In the performance of this task, my first duty is to offer, in the name of my colleagues and for myself, a cordial greeting to those amongst you in whom we recognise with a friendly interest our pupils of the last and previous sessions. We also desire to welcome those who now for the first time take their seats as students in this theatre; and we acknowledge with thanks the attendance of those gentlemen who do us the honour to be present as visitors on this occasion.

I purpose now to address myself chiefly to the freshmen—to those who are about to commence that most important part of their life's labour, the preparation for the practice of medicine. In the first place, gentlemen, I can in all sincerity congratulate you on your choice of a profession; and I do so after twenty years' experience of the study and practice of medicine, with a full knowledge of the peculiar trials and difficulties which belong to our profession, but with a firm conviction that these are more than counterbalanced by the advantages and the blessings which its members may generally secure for themselves, and confer upon others, by high principle and honest industry in the pursuit of their calling.

It is sometimes urged as an objection to the profession of medicine, that it offers to those who enter it none of those great prizes which are eagerly contended for, and often won, by the members of other professions; that comparatively few amongst us obtain great wealth, and none the dignity of a peerage. Well, gentlemen, if great wealth and high titles are the objects of your ambition, the practice of medicine is not your vocation. But if you can be content with a reasonable competence—with the rank and position of scientific men—with the consideration and respect which are never withheld from the practitioners of an honourable and beneficent art—you need have no reason to regret that circumstances or your own choice have placed you where you are. Nor, as I think, is it one of the least advantages of our calling, that it rather forbids than encourages that undesirable spirit of strife and contention which a struggle for high places almost of necessity engenders. Then, be it remembered, that not only in past ages, but also in the present, some of the most learned and wisest and best of men have devoted their lives to the practice of medicine and surgery. These men constitute the aristocracy of our profession, and in their ranks let it be your ambition to obtain a peerage.

In addressing to you, now, such words of warning and counsel as my experience of the temptations and dangers and necessities of men in your position has led me to think may be of service to you, I shall assume that you all *desire* to be in the number of those who, when the period of their pupilage here is ended, will be able to look back upon their career with a happy consciousness that they have to the best of their ability availed themselves of the opportunities of instruction here afforded them ; who will rejoice in having formed amongst their fellow pupils and their teachers valuable and enduring friendships, and who will enter upon the practice of their profession well prepared for its many and great responsibilities. We know, however, from the experience of ourselves and others, that with the willingness of the spirit is but too often associated the weakness of the flesh. *Video meliora proboque, deteriora sequor*, is a confession which every man, in some degree, has need to make. Therefore, in the hope that I may contribute somewhat to strengthen your good resolutions, and incite you to a steady and diligent application to your work throughout the whole period of your college course, I beg your attention to certain facts and considerations, which I will make as brief and as little uninteresting as I have it in my power to do.

You are now members of a great College, in which, as you are aware, there are teachers and pupils labouring in every department of human learning. While each division of the College has its distinct staff of professors and masters, and to a certain extent its peculiar mode of working, the entire establishment is presided over by one Head. Moreover, there has been framed for our governance a general plan of collegiate discipline, to which all of us, whether professor or pupils, are expected to conform. Now, gentlemen, the first duty which you owe to yourselves and to those who have a claim upon your consideration, is to render a cheerful and loyal obedience to every rule of the College. Be assured that each part of the discipline here established has been well and wisely considered, and that its object is your welfare—the welfare of those for whom the founders of this Institution have been careful to provide, not only the teaching required for their respective pursuits in life, but also the education of Christian gentlemen.

The mental and moral training which you have hitherto received has had for its object to develope and strengthen and discipline your perceptive and reasoning powers, and to implant in you right principles of action. You are now to commence a work in which you will find ample scope and opportunity for the use of all that you have yet learnt in every school of instruction to which you have had access. This knowledge, and these good and high principles, you must bring with you here, and make them subservient to your present purpose.

And now let me put you on your guard against the danger of allowing your attention to be diverted from your duties, especially during the next few days, by the novelty and excitement and allurements of this great city. Much of your success as students will depend on your making a good beginning, and to no class of men are the proverbial dangers of procrastination greater than to the medical student at the commencement of his career.

There is reason to fear that too many men in your position have wasted much time during their first and second years in London, under the impression that a few months of hard work, with the help of a 'grinder,' will enable them to cram sufficient knowledge to pass the necessary examinations, and that more than this is not required of them. Now, I warn you that this is a fatal delusion—fatal to your highest success—fatal to your own comfort and happiness—and fatal to those whose lives will hereafter be entrusted to your care. For consider, in the first place, what is required by the Examining Boards. They require of you a certain minimum amount of knowledge, without which it is considered that you could not with safety be permitted to practise on her Majesty's subjects. I am sure that there is not one amongst you who thinks so meanly of himself and of his profession that he would, at the commencement of his career, prescribe this limit to his labour and his ambition, and who would be content with possessing the mere licence to practise—a licence which, moreover, in this land of liberty and free-trade (free-trade, not only in the staff of life, but in human life itself)—a licence, I say, which he will share with many notorious quacks and pretenders, who have no true knowledge of either the science or the art of medicine. Bear in mind now that the curriculum of your studies has been prepared for you. Your attention has to be given to certain subjects in a prescribed order; and be assured that your success as students now, and as practitioners hereafter, depends upon your working heartily and honestly at each subject as it comes before you in your academic course.

The end and object of all your labours is the acquirement of such a knowledge of the diseases of the human body as will enable you to prevent and to cure them. Now, the foundation of this knowledge of disease can be laid only in a practical familiarity with the structure and functions of the body in health.

Without some knowledge of the construction and working of a machine made by human hands, you would scarcely undertake to repair its injuries or to correct its derangements; neither will you dare, without an adequate knowledge of anatomy and physiology, to tamper with the human body, so 'fearfully and wonderfully made,' and so admirably adapted to fulfil its various functions.

Your study of anatomy will begin immediately with the bones of the human skeleton. This may not, perhaps, at first, appear to you a very inviting subject; but it is the basis of all anatomical knowledge, and if you do not work at it with interest the fault must rest with yourselves; for besides the stimulus to industry which is afforded by a consideration of the intrinsic importance of the subject, you will have the teaching and guidance of a professor who, as I well remember, by the clearness and method and animation which characterize his lectures, possesses the power of imparting a lively interest even to so dry a subject as the anatomy of the bones.

And let me impress upon you, that not only in the study of anatomy, but in every other part of your professional course, it is of incalculable importance that you should be as practical as possible. Do not be content with a written or an oral description of any object which you have an opportunity of examining by any one or more of your own five senses. The several professors will endeavour to make their teaching as much as possible demonstrative; and in this way not only will they directly impart a large amount of knowledge which could not otherwise be conveyed, but they hope to excite in their pupils a desire to make experiments and observations for themselves.

Of anatomy, it is scarcely necessary to say that it can be learnt for any useful purpose only by repeated and careful dissection of the dead body.

Chemistry, again—the applications of which to the science and practice of medicine are continually increasing in number and importance—chemistry must be studied, not only by the aid of well-illustrated lectures and text-books, both of which helps you will have in an eminent degree, but also, as much as time and opportunity will permit, by practical work in the laboratory.

And if it be important that you should obtain a practical familiarity with other subjects, it is of primary importance that your knowledge of *disease* should have a real and practical character. Mere book knowledge—the vague impressions of disease which you derive from the best of lectures—will help you but little by the bedside of the patient. Books and lectures, useful and essential as they are in their proper place, can do little more than put you in the right way of learning for yourselves the nature and treatment of disease. For the attainment of this knowledge you are bound, by the most solemn obligation, to educate every sense by which the numerous phenomena of disease may be recognised, and to train and discipline your reason and your judgment in order that you may correctly interpret the signs and symptoms by which your practice will hereafter be guided.

Although the obligation to a faithful discharge of this duty is independent of all other considerations, yet I venture to suggest that you cannot neglect your *clinical* studies at the present day without very seriously endangering your own interests. Each year is adding to the precision and accuracy of our means of diagnosis. I need only refer to the diseases of the lungs, and heart, and kidney, in illustration of this remark. Now, just in proportion as the diagnosis of disease is rendered easier and more exact, does the distinction between an educated and an ignorant practitioner become more decided and more easy of recognition. Fortunately for many of us, our patients can rarely discover that our *treatment* has been erroneous; but a blunder in *diagnosis*—a mistake as to the nature of a disease—has much less chance to escape detection.

If, then, during the period of your pupilage, you neglect the opportunities which will be afforded you to acquire skill in the physical diagnosis of diseases of the chest and of the kidney, you will rarely have an opportunity of supplying that deficiency in your after-life, and you will most assuredly have abundant reason to regret your negligence. Moreover, those of you who proceed to a medical degree at the University of London, will have their knowledge of these subjects tested in a very practical manner. The examiners will bring before them actual cases of disease, and specimens of urinary sediments, and the candidates will be required to show that they can readily detect and correctly interpret the physical signs of disease.

And surely there is not in the whole range of secular pursuits a subject of higher interest than this of medical diagnosis, connected as it is with the power of detecting disease—of distinguishing the curable malady from that which is incurable—of directing the appropriate treatment—and of predicting, often with a near approach to certainty, the fate of our fellow-creatures.

There is one peculiar feature of our calling which has often been the subject of remark, and to which, for a moment, I beg your attention. Our daily work brings us into contact with much from which we naturally shrink with aversion, and even with dread. We are constant witnesses of disease in all its forms of suffering and degradation and decay, and we are only too familiar with death. Now, it certainly is not to be desired that the sensitiveness which sickens at the sight of a wound, or shudders at the presence of death, should be retained by the practitioner of medicine. No one deficient in the power to overcome these feelings could effectually do the work of a physician or a surgeon.

And it clearly was intended by the Great Author of our nature that these passive feelings should be subdued—not however until they have been replaced by their corresponding practical principles of action. The loathing and the shrinking at the sight of disease may be no longer felt, yet the tenderness for what is weak, the true sympathy with suffering, and the active principle of benevolence, should remain and grow. The dread and awe of death may cease, yet without loss of reverence even for the dead body of man, mindful as we ought to be of its past history and its future destiny, and not forgetful of our own mortality. Do not imagine that these considerations are unpractical—that they belong to the theologian, and that they concern not those whose chief work is the cure of bodily disease. Rely upon it that a hard, selfish, unsympathising, irreverent spirit, is entirely obstructive of that true scientific insight which 'reaches farthest into nature's mysteries,' and which it should be our earnest endeavour to acquire and to retain.

If you want a practical illustration of the principle which I have endeavoured to inculcate, you may find it—in one form at least—in the course of your studies at the hospital. You will there learn that the highest degree of surgical skill—steadiness and precision in the use of the knife rarely equalled and never surpassed—courage and self-possession in the midst of the most appalling difficulties—may be combined with the greatest tenderness and consideration for the patient, and with the most scrupulous care to guard him from unnecessary pain and peril.

I have already exhorted you to be practical in your studies, and to rest content with nothing less than demonstration with respect to all subjects which admit of demonstration. Let me remind you, however, that in medicine, and in the sciences connected with it, and especially in all that relates to organization and life, there is much that is unseen and mysterious. In the practice of our profession, too, we have often to decide and to act in matters of the very gravest moment upon evidence which falls far short of demonstration. And if our art be not so entirely conjectural as it has sometimes been declared to be, it must be confessed that many of its rules and doctrines are based only upon probability, and that, too, of by no means the highest kind. The difficulty and the uncertainty of the art of healing being notorious, it is obviously of the highest importance that those who practise it should learn to reason accurately upon the phenomena of disease, and especially upon the influence of treatment—that they should clearly distinguish between fact and hypothesis, and that they should, as far as possible, keep their minds free and untrammelled, always open to conviction, and ready to receive light from every source.

Considering the great influence which medical theories and hypotheses have ever exerted upon medical practice; seeing that in not a few instances an erroneous theory of a disease has led to a mischievous plan of treatment, and how difficult—nay, almost impossible—it has appeared to be for those who hold the wrong theory to abandon the injurious practice or to see its evil consequences, I have been led to think that this subject might be fitly, and as I hope usefully, referred to here. I purpose, therefore, to give you two or three plain and intelligible illustrations of the influence of theory on practice; the practical lesson which I desire to convey to you being this,—that medical theorists incur grave responsibilities; that any theory which is intended to influence our practice should be very rigidly scrutinized, and that we should be especially jealous of a theory which has originated with ourselves, and to which, therefore, we may naturally be disposed to be more indulgent than to the offspring of another's brain.

I will take my first illustration from the history of small-pox, a disease which has been deprived of its terrors by the great discovery of Jenner, but which formerly was one of the most fearful scourges that have ever fallen upon man. It is a well-known fact, that for a considerable period of time the natural loathsomeness of this disease was intensified, and its fatality increased, by an injurious mode of practice which originated in an erroneous theory. The eruption of small-pox on the skin, it was argued, is a means of eliminating a poison from the system ; and so far we, at the present day, believe that this theory is in accordance with facts : but the ancient theory went on to affirm that a high temperature was essential for the maturation of the pustules and the favourable progress of the disease. The practice suggested by this theory was to cover the patient with heaps of bed-clothes, and to confine him in a heated atmosphere, with closed doors and windows. The result was, that the sufferer from this disease, besides being oppressed by the heat of his chamber, was compelled to breathe air charged with the fœtid and poisonous emanations from his own skin.

The great English physician, Sydenham, pointed out the error and the evil of this practice, and substituted the cooling regimen, by which the mortality from small-pox was very much lessened. One would suppose that the practice of allowing the sufferer from small-pox to breathe fresh air freely, would at once commend itself to the common sense of any one to whom the subject was propounded ; but we gather from some incidental remarks by Sydenham, that this was by no means the case, and that he met with fierce opposition in his endeavour to introduce his new mode of treatment.

Thus he says in one place:—'This is the true and genuine method of treating this sort of small-pox, and however much it may be opposed by the great and unfounded prejudice of the partizans of an opposite practice, it is the method which will prevail when I am dead.' And expressions similar to this occur in other parts of Sydenham's writings on this disease.

Here then, gentlemen, in the case of small-pox, we have one illustration of the practical evils which may result from an erroneous theory, and of the obstinate tenacity with which men will often cling to a theory which they honestly believe to be true, and upon which they have long been accustomed to act. Another illustration of the same principle may, as I think, be found in the subject of inflammation and its treatment. It must be generally known even beyond the limits of our profession, that the treatment of inflammatory diseases has undergone very considerable change during the last twenty or thirty years. The practice of abstracting large quantities of blood, the free use of mercury, and a rigid adherence to the so-called antiphlogistic regimen, find comparatively few advocates at the present day. The question then arises—what has been the cause of this change of treatment? This question has lately been much discussed. There are some physicians of great eminence who maintain that inflammatory diseases have undergone a change of type, as it is called; so that whereas a few years since very active measures of depletion were beneficial and necessary for the cure of inflammation, this mode of treatment is now, as a rule, uncalled for, and injurious. On the other hand it is argued, that there is no satisfactory evidence to prove that very active antiphlogistic treatment was at any time so beneficial as its advocates believed; still less, that inflammatory diseases have undergone so great a change as to render intolerable at the present day a mode of treatment which a few years since was essential for the patient's safety.

It would ill become me to dogmatize on this subject, but after a careful consideration of the whole question, I am convinced that the weight of evidence is in favour of those who, while admitting that diseases may, in some degree, change their type, yet maintain that inflammatory diseases and the constitution of our patients have undergone less change than medical opinions and practice. I believe that a too confident reliance upon an imperfect, and in some respects an erroneous, pathology of inflammation, led to an over-active treatment. Inflammation was supposed to be essentially a *sthenic* disease—a disease characterized by an excess of strength and vital activity in the part affected; and the physician, in his anxiety to quell the strong disease, often paid too little regard to the weakness of his patient.

There are probably few better tests of the truth or soundness of any doctrine when applied to practice, than the fact of its being consistent with the dictates of well-informed common sense. Now it certainly does *not* appear consistent with common sense to suppose that a disease, of whatsoever name or nature, which has been induced by exhausting and depressing influences—by excessive labour, by loss of rest, by abstinence, by hæmorrhage—or which occurs during the progress of some destructive organic disease, as of the kidney; that a disease so originating, as inflammation often does, can be remedied by a mode of treatment which has a like exhausting and depressing tendency—by the free abstraction of blood, by a rigidly low diet, by nauseating doses of antimony, and by mercury in almost unlimited quantities. It seems reasonable to suppose that a less implicit trust in what was known, or supposed to be known, of the morbid anatomy of inflammation, and a more strict attention to the entire natural history of the disease, more especially to its various causes, would have done much to prevent that fearless and indiscriminate carrying out of the antiphlogistic regimen which we cannot but consider to have been often injurious.

With reference to the dangerous and durable influence of false doctrine upon the mind of its recipient, I am tempted here to borrow a passage from a lecture by one of the living masters of our profession:* 'There is nothing more difficult,' says Dr. Stokes, 'than for a man who has been educated in a particular doctrine to free himself from it, even though he has found it to be wrong. There is something in the human mind which renders the reception of a doctrine, if it be a bad one, a most dangerous circumstance. It is like the imbibition of a particular poison or miasma. We find that some men who have been once exposed to the miasmata which induce intermitting fever, will, for the whole course of their lives, be incapable of getting rid of that poison which has been once received. And thus it is not only with the material, but with the immaterial world; thus it is not only with physical, but with moral or intellectual impressions.

'There is nothing more difficult than to unlearn. This fastening of false doctrine in the mind is one cause; but there are other causes too: the indolence of many men will prevent them taking the trouble to unlearn. The pride of many men has the same effect; and above all things there is this, that a very large number of students, not only of surgery but of medicine, although they were taught the technicalities of the profession, the alphabet of the profession as it were, were not taught what is infinitely more important—namely, how to teach themselves. Now, this is the principal, and ought to be the grand, object of every teacher of medicine. I believe that no man can be fully and entirely taught anything. He must teach himself; and what the teacher has to do, and what I have ever set before myself as my highest duty, is to teach you how to teach yourselves.'

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* Dr. Stokes: Medical Times and Gazette, vol. xxix. p. 54, 1854.

Although many important practical lessons may be derived from a careful study of the errors of those who have preceded us, it is a more grateful task to point to instances in which benefits have been conferred upon mankind by successful research leading to improved modes of treatment. A very interesting example of this kind is afforded us in the new method of treatment proposed by the late Dr. Marshall Hall for the recovery of drowned persons. It appears to me that, for various reasons, a brief allusion to this important subject may not inappropriately be made on an occasion like the present. For, firstly, it is desirable that this improved method of treatment should be known to all classes of the community, since it may happen to any one who possesses this knowledge to have the happiness of saving life when medical aid cannot be obtained until it is too late to be of use. Then we have here afforded us a remarkable and very interesting illustration of the successful application of physiological reasoning to practice, the consideration of which may serve as a wholesome stimulus to the student of physiology. And, lastly, the whole subject derives a singular and melancholy interest from the fact that it was worked out by Dr. M. Hall with untiring energy and perseverance during the last few months of his life, after he had retired from the practice of his profession, which he had done so much to advance, and while he was labouring under a painful disease which he knew to be incurable. In the example of this distinguished physiologist and physician we may all find a motive to industry in the work of our calling.

Dr. Hall's first paper, On Asphyxia, its Rationale and its Remedy, appeared in *The Lancet* of April 12th, 1856. In this communication he clearly points out the physiological errors of the rules promulgated by the Royal Humane Society for the treatment of drowned persons. These rules have for their chief object the restoration of the temperature of the body by external warmth, and especially by the warm bath.

Now, it has been proved experimentally, that an animal is more speedily killed by immersion in warm water than in water of a lower temperature. The explanation of this fact appears to be, that since the immediate cause of death from drowning is the poisonous influence of the carbonic acid which accumulates in the blood when the respiration is suspended, and since the formation of this gas is favoured by an accelerated circulation of blood, a high temperature, by quickening the circulation, increases the quantity of the poisonous gas, and so hastens the fatal result.

It is probable, too, that in some cases the warm bath has caused death by syncope. A case in which this result occurred was published by Mr. J. C. L. Jennings, in the *Association Medical Journal*, April 22nd, 1853. A woman, aged eighty, had been partially restored by artificial respiration and galvanism; but as she remained cold and unconscious, she was placed in a warm bath. After being three minutes in the bath, she looked about her with an anxious expression of countenance, attempted to raise herself, then convulsively grasped her chest with both hands, fell forward in a state of syncope, gasped a few times, and was dead.

It appears, therefore, that the warm bath, in cases of asphyxia from drowning, is not only not beneficial, but positively injurious.

What, then, is the remedy for the cases in question? In the words of Dr. M. Hall:—'If there be one fact more self-evident than another, it is that artificial respiration is the *sine quâ non* in the treatment of asphyxia, apnœa, or suspended respiration.' Dr. Hall's great merit in this matter was twofold—first, that he insisted upon the fact that artificial respiration is the primary and chief object to be attained; and, secondly, that he devised a most convenient and ready method of accomplishing this object. In the readiness and ease with which Dr. Hall has taught us to perform artificial respiration consists the great practical value of his method; for it is obvious, that in cases of suspended animation from drowning, loss of time is often equivalent to loss of life.

The '*Marshall Hall Ready Method*' of performing artificial respiration is based on the following facts:—When an inanimate body is placed in the prone position the cavity of the chest is compressed by the weight of the trunk, and *ex*piration takes place. When the body is turned on the side, and a little beyond towards the back, the pressure is removed from the front of the chest, which now expands by its own resiliency, and *in*spiration occurs. By placing the body alternately in these two positions, artificial respiration is performed.

It has been ascertained by experiment that the volume of air which passes into and out of the lungs during these movements of the body, is sometimes equal to, and in most experiments at least two-thirds of, the amount which is breathed during natural and ordinary respiration—this quantity being assumed to be about thirty cubic inches.

The rules for the treatment of cases of asphyxia, as amended and published by Dr. M. Hall in the *Lancet* of October, 1856, are the following:—

'1. Treat the patient *instantly*, *on the spot*, in the *open air*, freely exposing the face, neck, and chest to the breeze, except in severe weather.

'2. Send with all speed for medical aid, and for articles of clothing, blankets, &c.

'I. *To clear the Throat.*

'3. Place the patient gently on the face, with one *wrist* under the forehead.

'(All fluids, and the tongue itself, then fall forwards, and leave the entrance into the windpipe *free*.)

'II. *To excite Respiration.*

'4. Turn the patient slightly on his side, and
  'I. Apply snuff or other irritants to the nostrils, and
  'II. Dash cold water on the face, previously rubbed briskly until it is warm.

'If there be no success lose no time, but

'III. *To imitate Respiration.*

'5. Replace the patient on his face.

'6. Turn the body gently but completely *on the side and a little beyond*, and then on the face, alternately; repeating these measures deliberately, efficiently, and perseveringly, fifteen times in the minute, *only*.

'(When the patient reposes on the thorax this cavity is *compressed* by the weight of the body, and *ex*piration takes place; when he is turned on the side, this pressure is removed, and *in*spiration occurs.)

'7. When the *prone* position is resumed, make equable but efficient pressure along the spine, removing it immediately before rotation on the side.

'(The first measure augments the *ex*piration, the second commences *in*spiration.)

'IV. *To induce Circulation and Warmth.*

'Continuing these measures.

'8. Rub the limbs *upwards*, with *firm pressure* and with *energy*, using handkerchiefs, &c.

'9. Replace the patient's wet clothing by such other covering as can be instantly procured, each bystander supplying a coat or a waistcoat.

'Meanwhile, and from time to time,

'V. *Again—to excite Inspiration.*

'10. Let the surface of the body be *slapped* briskly with the hand; or,

'11. Let cold water be *dashed* briskly on the surface, previously rubbed dry and warm.'

For the treatment of still-born children, the measures recommended are, excitement of the skin by the alternate cool and warm douche (the temperature being 60° and 100°), postural respiration, and rubbing with pressure upwards.

Dr. Hall had not long to wait for a practical confirmation of the correctness and the value of his ready method. I have already stated that his first paper was published in the month of April of last year; on the 9th of August succeeding there appeared in the *Lancet* a letter from Dr. Hadden to Dr. Hall, reporting the case of a boy, aged thirteen, who had been restored by the ready method, after having remained under the water for a period, as it was calculated, of nearly twenty minutes. Since that date nearly every number of the *Lancet* has contained a report of one or more cases successfully treated by the same method. I find there reports of seven cases of drowning, innumerable cases of still-born children, one of poisoning by poppy-water, with suspension of the pulse and breathing, and one of threatened death from chloroform.

Now, I do not ignore the fact that drowned men and still-born children have been restored to life by the means recommended and practised before the publication of the Marshall Hall method; but it is scarcely possible to doubt the superiority of this method, and it is reasonable to suppose that some of the published cases which have been successfully treated by this plan would have been lost under any other mode of treatment.

One of the most interesting of these cases was treated and reported by Mr. Cook, a student at St. George's Hospital. A boy, sixteen years of age, fell into a mill-lock at Guildford, and his body being carried by the water under the sluice-door, was kept submerged, at a depth of from five to six feet, for a period of from seven to eight minutes. When taken from the water, no signs of life remained. The ready method was immediately applied on the spot. After pronation and rotation had been proceeded with for from five to seven minutes, there occurred the first gasp of inspiration, the next in about half a minute, and about once in every four or six turns during the next twenty minutes. At the end of thirty-five minutes the boy could breathe without assistance, and the pulse could be felt at the wrist. Pulsation had been felt in the femoral artery some minutes earlier than this. He was then wrapped in a blanket and carried home. This boy certainly owes his life to Mr. Cook and the 'ready method.'

One advantage of the method in question is the readiness with which it may be applied by non-professional persons. Thus, amongst the seven cases of drowning to which I have referred as having been treated by the ready method, there is one reported by a mechanic at Sunderland, who swam out to rescue a drowning man, brought him to shore apparently lifeless, then immediately on the spot commenced the application of the new method, which he had seen described in the *National Life-Boat Institution's Journal*, and in about half an hour his efforts were successful. The man's life was saved.

Imagine to yourselves, gentlemen, the delight and solace which must have been afforded to Dr. M. Hall during the last days of his life by the thought that he had been permitted to be the honoured instrument of so much good to mankind; and then resolve that, by a faithful discharge of your duty now and hereafter, you will endeavour, with God's help, to earn for yourselves a like happiness and honour.

Bear in mind, however, that as men's gifts and opportunities differ, so also does the degree of success which attends their efforts. Remember, too, that what the result of your labour may be is far less important than that the work appointed you should be honestly and faithfully done, according to the ability that you possess. To each of you has been committed a talent to be employed for 'the glory of the Creator and the relief of man's estate,' and you will one day have to render an account of the manner in which this great trust has been discharged. In that day it may be that the highest rewards will be the portion, not of those who have here received the largest gifts, but of those who have been 'faithful in that which is least.'

INAUGURAL LECTURE.

Mr. Principal and Gentlemen,—

Nearly eighteen years ago, I sat on one of those upper benches and listened to my first lecture in this theatre. From that day to this, I have not ceased to be more or less closely connected with the College; and entering now upon the duties of the new office to which the Council—with the concurrence and approval of my colleagues—have done me the honour to appoint me, although I feel a deep and almost painful sense of responsibility—much increased, too, by a consideration of the great learning and reputation of my predecessor in this chair,—yet I am not without hope that I may prove myself equal to the work which I am here to commence.

And now, whilst you, sir, and several of my colleagues and friends have done me the favour and the honour to be present on this occasion, I feel sure that you will approve my determination to address myself chiefly to those who will constitute my class during the next three months.

Let me begin, gentlemen, by observing that you enjoy an advantage over many who have preceded you, in commencing the study of materia medica in the summer session, and not during your first winter in London. When I began my medical studies here, and for several years afterwards, materia medica was one of the winter courses, and the student had to attend it during his first session, at the same time with chemistry, anatomy, and physiology. The consequence was, that a large proportion of pupils who, not having previously studied chemistry, were ignorant of the very elements of that science, finding themselves at once plunged into the decompositions of the Pharmacopœia, made vain attempts to follow the teacher in his explanations of these complex phenomena, and, naturally enough, soon abandoned the whole subject as utterly and hopelessly mysterious and incomprehensible. Hence arose a tradition which has, I fear, descended even to the present generation of students, that materia medica is a dry, difficult, tedious, and uninteresting subject. I hope to convince you that this notion is in a great degree unfounded. My own conviction is that the subject of materia medica in connexion with therapeutics is one not only of great importance, but of high interest; and I trust that you will find that its difficulties, which would have been truly formidable if you had commenced the study six months ago, will now be greatly lessened by the progress which you have made during the past winter session in the three great fundamental sciences of anatomy, physiology, and chemistry.

It appears to me that I cannot make better use of the opportunity afforded me by this our first meeting to begin the work of the summer session, than by endeavouring to give you a general idea of the subjects which are usually included under the terms materia medica and therapeutics, and by showing you how far these subjects may be taught by lectures in this room, how far they are to be learnt elsewhere, and by other means than lectures.

The title of our course implies a division of its subject into materia medica and therapeutics. Under the first of these terms is included all that relates to the natural history of the materials which are used as medicines; their source and mode of preparation; their physical and chemical properties. By the term 'therapeutics,' in its most general sense, is meant that branch of medicine which has for its object the treatment of disease; but in a more limited and special sense, when taken in connexion with materia medica, it implies a knowledge of the physiological action of drugs or medicines, and their use in the cure of disease.

First, then, with respect to materia medica. It is obvious that we must know something of the tools with which we have to work in our endeavour to alleviate and to cure disease. Medicines are amongst the means which we use for this purpose, and very sharp-edged and double-edged weapons many of them are. Now, we must learn to recognise these agents when we see them, and to distinguish one from another; more especially ought we to be able to distinguish at once the comparatively harmless drugs from those which are hurtful and poisonous.

Upon the table are two specimens of bark—one, called angustura, or cusparia bark, which is a simple and harmless tonic; the other, the bark of nux vomica, which is a deadly poison. About fifty years ago, several lives were lost on the Continent in consequence of the poisonous nux-vomica bark having been mixed with and sold for the tonic angustura bark. On this subject I shall have more to say hereafter. I refer to it now to illustrate the vital importance of the distinction between harmless and poisonous drugs.

Again: Consider the fatal consequences which might result—and which, upon several occasions, have resulted—from mistaking the root of aconite for that of horseradish. Once more: Look at these two fruits—or seeds, as they are commonly called—the one anise, the other conium. You see that they so far resemble each other that a careless observer might fail to distinguish between them. One, however, contains a simple aromatic oil, the other a most poisonous liquid alkaloid.

There are other reasons why, as practitioners of medicine, we are bound to acquire a knowledge of the physical and chemical characters of the drugs which we are in the habit of using. One would suppose that the natural impediments in the way of the successful practice of the art of healing were in themselves sufficiently great and numerous; yet it is a notorious fact that the unnatural avarice and fraud and carelessness of some of those who prepare or sell our drugs, have too frequently added to our difficulties by supplying us with impure, adulterated, and inefficient medicines. I will briefly refer to some instances by way of illustration.

Iodide of potassium is a medicine in very common use, and of great efficacy, especially in some forms of syphilitic disease. Now this salt is often mixed with a large proportion of carbonate of potash; and the explanation of the fact is to be found in one of the modes in which the iodide is prepared. First an iodide of iron is formed by heating together in water iron filings and iodine; this compound is then decomposed by adding a solution of carbonate of potash; carbonate of iron is precipitated, and iodide of potassium remains in solution. This is poured off, the fluid evaporated, and iodide of potassium crystallizes. Now, it is obvious that if more carbonate of potash has been used than is necessary to decompose the iodide of iron, the excess of carbonate will be mixed with the iodide when the solution is evaporated.

Take another similar instance, in the case of a very important medicine—tartar-emetic—which is often mixed with bitartrate of potash. It happens thus: Tartar-emetic is prepared by boiling teroxide of antimony with bitartrate of potash; the result is, that a double salt is formed by the combination of the antimonial oxide with the tartrate of potash; and if an excess of the bitartrate be used, this salt will be mixed with the tartar-emetic. Without stopping now to indicate the tests by which these adulterations of iodide of potassium and tartar-emetic may be detected, I may mention that if the salts are well crystallized, this alone is conclusive evidence that they are free from the admixture which I have mentioned.

Some of the most important medicines derived from the vegetable kingdom are known to be frequently and largely adulterated. Thus some specimens of *scammony* contain a large proportion of chalk and starch, and *elaterium* is frequently in great part composed of the same inert materials.

Now let me give you a practical illustration of the inconvenience and serious mischief which may result from this pernicious practice of adulterating drugs. We have to treat a case of dropsy depending on disease of the kidney which has proceeded to the extent of threatening death by suffocation, in consequence of the lungs having become gorged by serous fluid. In such circumstances we very commonly have recourse to elaterium, as a most effectual means of quickly carrying off water by the bowels, and so relieving the lungs and other internal organs. A full dose of good elaterium would be a quarter of a grain. We order such a dose, and the druggist to whom our prescription is taken dispenses a compound of chalk and starch, with an infinitesimally small proportion of elaterium, which has the usual effect of infinitesimal doses, *i.e.*, none at all; and in the mean time perhaps the patient dies.

Or we may suppose a case in which the elaterium having been prescribed in moderate doses, and having proved inoperative, has been given in the large dose of a grain, but still without result, when the same prescription is taken to another chemist, who dispenses an unadulterated drug, the operation of which is so violent as to endanger the patient's life.

Opium, the most important drug in the list of the materia medica, is rendered variable in quality, and therefore uncertain in its operation, not only by diversities of soil and climate, but also by the fraudulent admixture of various inert substances, both organic and inorganic, and it is said in some instances by the sale of the nearly inert residue left after the abstraction of the morphia, which, as you know, is the most important constituent of the drug.

Further, it is stated by Trousseau and Pidoux that there is in the market an abundance of *yellow cinchona bark*, from which a portion of the alkaloids has been extracted by water acidulated with hydrochloric acid.

These examples will suffice to show you that to every practitioner of medicine a knowledge of the natural history of drugs, of the adulterations to which they are liable, and of the means by which these adulterations may be detected, is of high practical importance.

Again, it is obvious that a knowledge of the composition and chemical properties of the materia medica is essential for every one who has to use these agents for the cure of disease. For various reasons, we are in the habit of combining two or more medicines in the same prescription; but it is evident that an indiscriminate mixture of chemical compounds would be attended with results of decomposition and recombination quite unexpected by one ignorant of chemical science. We say that certain substances are *incompatible* with each other; by which we mean that they cannot be mixed without undergoing chemical changes which confer upon them new properties, or which might render them quite inert as therapeutic agents. One or two examples may suffice for the illustration of this part of our subject.

The compound infusion of roses contains sulphuric acid, and this compound is often used as an astringent to check excessive secretion from the skin and mucous membranes. Acetate of lead is another powerful and valuable astringent; but I scarcely need tell you what would result from the addition of acetate of lead to the compound infusion of roses. An insoluble sulphate of lead would be precipitated, and the mixture would be rendered inert.

Several of the most important vegetable medicines are liable to decomposition by mixture with other substances. For instance, opium contains, as its most active constituent, morphia, combined with meconic acid, and the morphia may be precipitated and rendered insoluble by a variety of substances—for instance, by potash and soda, or the carbonates of these alkalies, and by tannic acid, which exists abundantly in the vegetable astringents. So that the practitioner who adds opium to a mixture of logwood or catechu, in the expectation of making it more powerfully astringent, does in fact precipitate the two active constituents of his unchemical mixture in the form of an insoluble tannate of morphia.

Again, the combination of acetate of lead with opium is a very unchemical one—an insoluble meconate of lead and a soluble acetate of morphia are formed; a double decomposition which, when these medicines are given in the form of a pill, is of little consequence; but no one aware of the changes which take place would combine the acetate of lead with opium in a liquid form.

One more illustration of this subject. In prescribing tonics we often combine some preparation of steel with a vegetable bitter. Of course you know what would be the result of adding iron,—the perchloride, for instance—to any vegetable preparation containing tannin—for example, the infusion of cinchona or gentian. You immediately form a dark green or black compound, which your patient would naturally suppose to be a bottle of ink or Warren's blacking sent by mistake for medicine.

A knowledge of the fact that certain medicines are incompatible with each other on account of their tendency to form new and comparatively inert compounds, is of great practical value in the treatment of some cases of poisoning. It is evident that those substances which are incompatible are in a greater or less degree antidotes for each other. For instance, if you wished to obtain the medicinal effect of a mineral acid, you would not combine it with chalk or magnesia; but if you had to treat a case of poisoning by a mineral acid, you would immediately have recourse to chalk or magnesia as an antidote. The caustic alkalies and their carbonates have their antidotes in the vegetable acids.

For the acetate of lead, which is immediately decomposed by sulphuric acid or a soluble sulphate, we have an effectual antidote in sulphate of magnesia or soda. And in the event of any unavoidable delay in removing a poisonous dose of opium from the stomach, the absorption of the poison may be much retarded by giving a vegetable astringent, such as strong tea, and thus forming an insoluble tannate of morphia.

Thus far, then, we have been considering the subject of materia medica—a subject which admits of being taught to a considerable extent by lectures, illustrated as these lectures will be by specimens from the museum, both of the drugs themselves and of the plants which yield the vegetable products; by drawings and diagrams, and by demonstrations, so far as time and opportunity permit, of the means by which the genuineness and purity of drugs can be determined.

Further, I would advise those of you who have not yet had the opportunity of acquiring a knowledge of dispensing and practical pharmacy, to do so at some early period. You will find that the practice of dispensing medicines an hour or two daily for three months will give you a practical familiarity with the properties of drugs and the mode of compounding them, which will greatly assist you hereafter in the somewhat difficult art of prescribing.

Let me take this opportunity of publicly acknowledging a very valuable donation to our museum which has been made within the last few days. Mr. J. E. Howard, of Stratford, who is well known as an authority on the subject of the cinchona barks, has presented to the College a large collection, including authentic specimens of most varieties of the commercial barks, and several beautiful specimens of the cinchona alkaloids. This gift will, I am sure, be highly appreciated both by the Council of the College and by the pupils in the medical department.

I also desire to mention that Mr. Savory, of Bond-street, has most kindly and generously undertaken to renew those of our perishable specimens in the museum which have been injured by exposure to light and air.

We now pass on to the subject of *therapeutics*, which is the practical end at which we aim in the study of materia medica. As practitioners of medicine, we have little interest in the materia medica as mere objects of natural history; our chief care and study being to make these agents subservient to the cure of disease. Now, the mention of this word disease suggests another important and extensive subject of inquiry. If a knowledge of the natural history of drugs, and of their physical and chemical properties, be of essential importance to the practitioner of medicine, so also is a knowledge of the natural history of disease.

I do not forget now, nor shall I cease to remember in my future lectures, that my class is composed of students who are supposed as yet to have no knowledge of disease. Further, I am aware, as you are, that my business here is not to teach you pathology or the principles and practice of medicine. The systematic study of these subjects you will commence next October; you will continue it in the wards of the hospital and in the clinical lecture-room, and if you are true to yourselves and to your patients, you will pursue it with increasing delight and interest until your work in this world is done. But inasmuch as I have to teach you therapeutics—in other words, the use of medicines in the cure of disease—it is obvious that in doing so I must make frequent allusion to pathological subjects; and I believe that I cannot make better use of the time which remains to me to-day than by endeavouring to give you a general view and illustration of the relationship which exists between the two great subjects of therapeutics and pathology.

And first, I would beg to remind you that the term pathology implies not merely morbid anatomy, but the whole natural history of disease, its causes, its nature, and its consequences, including, of course, its morbid anatomy. Now, it is obvious that no one can safely and successfully undertake the cure of disease who has not learnt to distinguish one form of disease from another. An accurate diagnosis is an essential condition of successful therapeutics. Quinine is an almost certain cure for ague; but if we mistake the hectic fever of advanced consumption for ague, and prescribe quinine in the hope of a cure, we shall be disappointed, and then we may begin to suspect that quinine as a remedy for ague has been over-estimated.

For the cure of ague, however, it is an established fact, that we have in quinine a specific remedy—a remedy, that is, which will cure that particular *species* of disease without exerting such an influence upon the functions of the body as will serve to explain the curative action of the drug. Unfortunately, however, for us and for our patients, there are few diseases for which we have specific remedies so efficacious as quinine undoubtedly is for ague,—few diseases whose names, when once we have arrived at a certain diagnosis, at once suggest the appropriate remedy. In a large proportion of cases our treatment of disease is based upon what are called general principles. In other words, we study the phenomena of disease with a view to ascertain their nature and tendency; we learn what we can of the natural curative efforts which are continually displayed during the progress of various diseases; and partly upon the knowledge which we thus obtain, partly upon the experience of ourselves and others in similar cases, are based the rules for our guidance in the treatment of these diseases—one of the most important rules being to avoid all mischievous interference, and to do nothing if we have not a reasonable hope of doing good.

Now let me illustrate these general remarks by some particular instances. And first by a brief allusion to the subject of *scarlet fever*, which, as you probably know, is a disease produced by a morbid poison in the blood, the effect of which is to excite inflammation of the mucous membrane of the throat and of the skin, the scarlet colour of which gives the name to the disease. It is probable that the fever poison is eliminated by means of the cutaneous rash, and by the desquamation of the cuticle which follows the rash. This, at any rate, is certain, that the suppression of the rash by exposure to cold is almost constantly followed by internal mischief. The fever poison appears by that means to be driven in upon the kidneys, which become irritated and inflamed, their proper functions are impaired, and the patient becomes dropsical.

Suppose, now, that in the treatment of scarlet fever, without any knowledge or consideration of its pathological history, we made it our chief business to subdue and to remove that which to a superficial observer might seem to be the most important symptom—namely, the burning redness of the skin. This might speedily be done by cold air and cold lotions, and the result would be such as I just now alluded to—kidney-disease and dropsy. The disease of the skin will have been cured, but possibly at the expense of the patient's life.

Again, I may give you an illustration of the connexion between pathological science and rational therapeutics in the case of hypertrophy of the heart. This condition of the heart is sometimes spoken of as if it were a disease *per se*, which it should be the object of the physician to remove. The fact is, however, that this hypertrophy or increased development of the muscular structure of the heart is a consequence of some impediment in the course of the circulation which calls for increased efforts on the part of the heart to overcome the obstruction. The attempt to diminish the hypertrophy by low diet and depletion would in most cases hasten the fatal result, while the opposite plan of giving nutritious food and tonics is often most beneficial by giving strength to the heart, and so enabling it the more effectually to overcome the impediment offered by a diseased valve or other obstruction to the outward flow of the blood.

Knowing as I do the great influence which pathological science and pathological theories have in all ages exerted upon the treatment of disease, I hold it to be a most important part of my duty as a teacher of therapeutics, to urge upon you the necessity of your using every endeavour to acquire a thorough practical knowledge not only of the means of diagnosis, but also of the whole natural history of disease so far as this subject has been made out. Without this knowledge you can neither treat disease successfully, nor can you correctly estimate the effect of your treatment.

It is a serious defect in some of our best works on materia medica, that while everything relating to the natural history of medicines is given with the greatest care and accuracy it often happens that the therapeutical uses of drugs are so vaguely described, and with so little attention to the minutiæ, upon a regard to which, in many cases, the success of the practitioner entirely depends, that the student will too often find these books insufficient, and sometimes, I fear, fallacious, guides. In a work on materia medica, it is, of course, not to be expected or desired that the author should enter into all the details of practical therapeutics; but a more definite indication than is usually given of the mutual relations between particular remedies and precise pathological conditions, is much needed.

Here, again, let me illustrate these general remarks by some particular instances, which will also serve as additional indications of the close relationship which exists between therapeutics and pathology; and first I will briefly refer to delirium tremens, and its treatment by opium.

Delirium tremens is a disease, the general nature and treatment of which are so notorious that you probably have already some knowledge of the subject. Those who labour under this disease are obstinately wakeful; they have a peculiar form of delirium, accompanied with spectral visions, and a general unsteadiness and trembling of the voluntary muscles. In a very large proportion of cases the patient has indulged in excessive quantities of alcoholic stimulants; in some few instances, however, over-work, grief, and anxiety have been the exciting causes of the disease in persons of strictly temperate habits. Now, the chief remedy for this alarming and distressing form of disease is opium, which, when it acts favourably and sends the patient into a sound sleep, will often effect a cure in the course of a few hours; the patient awakes refreshed and rational; he takes food, again sleeps, and the cure is complete. If you get your knowledge of the curative influence of opium on this disease from some books on materia medica or the practice of medicine, you may be apt to think that this remedy is more certain, safe, and effectual in its operation than it actually is. You will perhaps suppose that the chief object is to give a sufficient quantity of the drug, only taking care that its *narcotic* operation is not carried too far. Now, I have told you that opium is the chief remedy for delirium tremens, but I proceed to show you that its operation is not always favourable, and that it is sometimes in a high degree dangerous; and I will give you what seems to be the explanation of these facts.

You probably are aware that opium, in moderate doses, acts upon persons in health, first as a stimulant, and subsequently as a sedative and narcotic. Its operation, however, is not the same upon all persons. While the usual effect of one or two grains of opium is to produce sleep, some persons are made wakeful by such a dose, with a feeling, however, of comfort, and even happiness. In others, again, it produces a distressing faintness, nausea, and vomiting, these symptoms coming on at a variable period after the dose has been taken.

I do not know that we can give any satisfactory explanation of this unpleasant operation of opium upon healthy persons: we call it idiosyncrasy, and in so doing of course we confess our ignorance. But in some cases of delirium tremens there is a morbid condition of the heart, which undoubtedly renders the patient liable to be unfavourably acted on by opium.

It has long been observed, that those who are suffering from delirium tremens often exhibit a tendency to prostration, faintness, and even fatal syncope; so that a patient, while violently struggling with his attendants, has been known to fall dead from sudden failure of the heart's action.

Within the last few years it has been found that in nearly every fatal case of delirium tremens the muscular substance of the heart has undergone more or less of that structural change which is known by the name of fatty degeneration; and in this condition of the heart we find, I believe, a sufficient explanation both of the tendency to death by syncope, as a consequence of violent muscular exertion, and of the depressing influence which opium has in some cases of delirium tremens. When opium is acting thus unfavourably, *it appears to have no narcotic influence whatsoever;* the patient continues wakeful, excited, and delirious, but he grows rapidly weaker; the pulse becomes quick, small, and feeble; the pupils are contracted; the skin is bathed in a profuse perspiration; and if the opium be continued in large and frequent doses, the patient rapidly sinks, but remains wakeful and conscious until perhaps within a few minutes of the fatal termination. These are cases in which opium appears to act as a powerful sedative poison upon a feeble, fat heart—the narcotism, or deep sleep, which usually follows a large dose of opium being entirely absent.

You will see how important it is that you should learn to recognise the symptoms by which this injurious operation of opium is manifested, in order that you may at once discontinue the opium, and counteract its depressing influence by brandy, beef-tea, and quinine.

There is one way, and only one, in which you can learn to recognise these symptoms, and that is by a careful and diligent study of actual cases of disease at the bedside of the patient. The brief sketch which I have given you of the unfavourable operation of the most important of all drugs in certain cases of delirium tremens, will serve to give you a general idea of a subject with which you will have to obtain a practical acquaintance in the wards of the hospital and in the clinical lecture-room. The therapeutical studies which you begin here you will continue there; and I may observe in passing, that one object which I shall endeavour to keep steadily in view will be to make my practical teaching in the hospital the complement and the illustration of the therapeutical doctrines which it will be my duty to impart to you in this room.

The next illustration which I have to offer you is one which affords a good example of the influence which pathological theories exert not only upon practice, but also upon the estimated results of remedies. I allude to the use of calomel in the treatment of cholera. Calomel has been a favourite remedy for this disease with practitioners whose views of the pathology of cholera, and of the *modus operandi* of mercury, have differed; but the principal advocate of the treatment of cholera by frequent small doses of this drug gives the following explanation of the disease and its cure by calomel. 'The chief feature of malignant cholera, with collapse, is suppression of bile, which is occasioned by congestion of the liver. The operation of calomel in repeated small doses is to remove the congestion of the liver, and to restore the secretion of bile—the reappearance of the secretion affording undoubted evidence that the worst symptoms of the disease are passing off.' Now, I believe it to be a fact that calomel, in certain circumstances, has the power of stimulating the liver and exciting an increased secretion of bile; but the question is, whether the use of calomel during the collapse of cholera has any direct agency in restoring the secretion of bile. This is a question which can be answered only by a reference to the cause of the suppression of bile in this disease. Now, the explanation of this symptom is so very simple and so full of interest, that I venture to give it in illustration of the aid which pathology may sometimes render to therapeutics.

The chief fact in the collapse of cholera is the almost complete arrest of the blood in its passage through the lungs. The time will not allow of my giving you all the proofs of this fact, but I may mention that the symptoms during life and the post-mortem appearances alike show that while the left side of the heart and the arteries are comparatively empty, there is a great accumulation of blood in the right cavities of the heart, in the large veins, and in the pulmonary artery. The great mass of the blood appears to be arrested in the minute branches of the pulmonary artery; so that the stream of blood which passes through the lungs into the left side of the heart and the arteries is greatly lessened. Now you are aware that this current of blood from the air-cells of the lung is the channel by which the oxygen is introduced into the system; and it is evident that, *cæteris paribus*, the supply of oxygen will be in proportion to the volume of blood which passes through the lungs in a given time. Reduce the stream of blood to one-fourth or one-sixth, and you diminish the supply of oxygen in the same proportion. This is precisely the condition of the pulmonary circulation and of the supply of oxygen during the collapse of cholera.

As physiologists and chemists, you are aware that the chief constituents of bile are products of oxidation,—so also are the urinary solids, and the carbonic acid which is exhaled from the lungs. A scanty supply of oxygen to the blood, then, will lead to a simultaneous decrease of bile, urine, and carbonic acid; and the suppression of bile during the collapse of cholera is not the result of an imaginary torpor or congestion of the liver, but it is simply due to the fact that the materials out of which bile is to be formed are conveyed to the liver only in the scantiest proportions, in consequence of a greatly diminished supply of oxygen. The only mode, therefore, in which the secretion of bile can be increased, is by increasing the supply of oxygen, and this is to be effectually done only by removing the impediment to the flow of blood through the lungs.

These considerations will, I think, suffice to show you that it is extremely doubtful whether calomel has any specific power of increasing the secretion of bile during the collapse of cholera. In every case of recovery from collapse, whether calomel has been given or not, the bile, the urine, and the carbonic acid excreted are simultaneously increased in amount, the temperature of the body at the same time rising as a consequence of more active combustion, and all the symptoms of obstructed pulmonary circulation disappearing.

I have yet to give you another illustration of the relation between therapeutics and pathology, in the use of the class of medicines called *diuretics*—medicines which tend to increase the secretion of urine, but the operation of which is proverbially uncertain. It would occupy too much time to enter fully into this subject on the present occasion. I shall endeavour to show you hereafter what are the circumstances in which this class of medicines are admissible, and the conditions which are necessary to insure their successful operation. I purpose now, by way of illustration, to say a few words of one class of cases in which a careful consideration of the natural history of disease will alone guard you against error in the use of diuretics and the estimate of their effects. I allude to cases of acute renal dropsy—for example, cases of dropsy occurring during the progress, or as a sequel of, scarlet fever.

You will have frequent opportunities of seeing cases of this kind in the hospital, and you will observe that the general dropsical swelling is associated with a very scanty secretion of urine—this secretion, moreover, being of morbid quality, high-coloured (often from a mixture of blood), albuminous, and usually containing numerous moulds of the kidney-tubes. Now, in a case of this kind it would naturally occur to one ignorant of the real nature and history of the disease to give diuretic medicines for the purpose of increasing the secretion of urine; and if he adopted this mode of practice, the favourable progress of the case, the greatly increased flow of urine which might speedily ensue, and the rapid disappearance of the dropsy, would very likely confirm him in the opinion that his plan of giving diuretics in acute renal dropsy is reasonable, safe, and efficacious. I venture however to affirm that the treatment of acute renal dropsy by diuretic medicines is, at the best, inefficacious, contributing nothing to the recovery of the patient; while in many cases it would probably oppose and retard the cure. My opinion is based upon pathological considerations, and upon experience.

The scanty secretion of urine is the cause of the dropsy, and an increased secretion of urine is the only means by which the complete removal of the dropsy can be effected. But what occasions the scanty secretion of urine, and what is the remedy for it? The secretion of urine is scanty because the flow of blood through the kidney is obstructed, and the structure of the kidney changed by the irritant action of the fever-poison, the tubes being choked with desquamated gland-cells, and with blood and fibrin, which have escaped from the gorged Malpighian vessels. The circulation through the kidney is retarded in conformity with that physiological law with which you are of course familiar —the law by which it appears that the retention of excrementitious material in the blood, immediately leads to an impeded flow of blood through the organ whose office it is to eliminate the material in question. For instance, asphyxia, with an accumulation of carbonic acid in the blood, is always associated with an impeded circulation through the lungs; and a scanty secretion of urine, with an accumulation of urinary excrement in the blood, is always attended with retardation of the renal circulation.

Now, what happens during the progress of cure in a case of this kind? The patient we will suppose to be placed in circumstances favourable for recovery—he is confined to bed, has a scanty diet, and means are taken to excite the secretory action of the skin and bowels, and thus to relieve the kidney in some degree of its over-work. The congestion of the kidney diminishes, and the secretion of urine begins to increase, until, in the course of four or five days from the time of admission, the quantity of urine, which at the commencement had been less than half the natural amount, becomes three times greater than the normal standard; no diuretic medicine of any kind having been given.

The explanation of this spontaneous diuresis is to be found in the fact, that during the acute stage of the disease the constituents of the urine, both solids and liquids, have accumulated in the blood, and have been effused into the areolar tissue and serous cavities. Now urea is a most powerful diuretic, and no sooner is the congestion of the kidney removed and the freedom of the renal circulation restored, than the urea exerts its natural diuretic action upon the kidney; and the copious diuresis which follows speedily removes the accumulated urinary solids and liquids from the blood and the serous cavities into which they had been effused, and so the dropsy is cured.

A diuretic medicine, such as squills, or cantharides, or acetate of potash, acts by stimulating the kidney to an increased secretion, while the drug itself is being eliminated by that gland. If, therefore, you give such medicines to a patient during the early stage of acute renal dropsy, you impose upon the kidney an extra amount of work without in the slightest degree adding to the working powers of the organ; and if you attribute to the action of your medicine the diuresis which sooner or later follows its use, you fall into the very common error of mistaking the natural course of a disease for the curative operation of drugs.

You see then, gentlemen, that in the study and practice of therapeutics, and particularly in estimating the effects of remedies, we have to make frequent allusion to the natural history of disease. You see that between the science of pathology and practical therapeutics there is a close and intimate relationship, and that in order to cure disease you must know something of its nature and its tendency. It is an undoubted fact that most of the conflicting opinions which have existed, and which still exist with regard to the treatment of certain diseases and the efficacy of particular remedies, have had their origin in an insufficient regard to the natural history of disease. Errors in diagnosis and errors in pathology have been fruitful sources of doubt and confusion in therapeutics, which nothing but a careful study of disease can remove.

Against one error I must warn you at the very commencement of your therapeutical studies. My teaching in this room will of course be almost exclusively of drugs as therapeutic agents. But you are not to suppose, as many of our patients appear to do, that the only or the chief business of the physician is to give drugs, and the sole duty of the sick man to swallow them; and that the cure of disease is to be wrought only by these means. The fact is that even in those forms of disease in which we trust most to drugs, the success of these means depends in a great degree upon strict attention to various minutiæ of general management, the importance of which neither the mere dispenser of drugs nor the patient can easily appreciate. As chemists, you know how entirely the success of an experiment often depends upon attention to the minutest circumstances—such as the purity of reagents, the degree of concentration, the temperature, the proportion of various ingredients, and the order of mixture. And so it is in the treatment of disease by drugs; only that as the phenomena of disease are highly complex, the disturbing agencies very numerous, and the results of therapeutical operations vitally important, the physician has need to be, if possible, more attentive to minutiæ than even the chemist. Moreover, there are some diseases and many minor ailments which may as easily and as successfully be treated without drugs as with them, if we could but persuade our patients to avoid the exciting causes of disease, and, while trusting more to the unaided powers of Nature, to put less confidence in the customary draughts of physic.

With reference to this subject and the practical difficulties attending it, I venture to borrow the following remarks from the pen of Dr. Latham. He says:—'The lowest office of medicine is to minister to mere ailments; and this is most effectually done by telling people what in their ordinary mode of living is injurious, and warning them against it. But inasmuch as injurious things are commonly very pleasant things, people are reluctant to leave them off at our mere bidding. Hence in this, which is their humblest province, small credit, upon the whole, has been gained by the best physicians. The advice they have to give is much too simple for the world to accept upon the credit and character of well-instructed and honest men. It needs to be enforced, not by the art which they *do* practise, but by the mystery which they do *not*. For no sooner does the same recommendation of abstinence from what is injurious gain the help which it needs from the mystery of homœopathy (a mere name, importing the discovery of something unintelligible, and importing it for the popular enlightenment, in Greek), than compliance becomes easy, cures multiply, fame vociferates, the glory is great, and great, too, is the emolument.'

Such, gentlemen, is Dr. Latham's estimate, and mine, of the mystery of homœopathy, and the source of its success.

THE END.

BY THE SAME AUTHOR.

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